

CLAIMS

1. An organic luminescence device comprising:
an anode;
an insulating or semiconductive inorganic thin film layer having an energy gap of 2.7 eV or more;
an organic compound layer comprising one or more layers which comprise at least an organic emitting layer, at least one of the layers containing an ortho-metallized metal complex; and
a cathode in order of the description of these members.
2. The organic luminescence device according to claim 1, wherein the inorganic thin film layer comprises one or more metals or compounds selected from metals, metal calcogenides, oxynitrides, carbides, nitrides, silicides and borides.
3. The organic luminescence device according to claim 2, wherein the metal(s) is/are one or more metals selected from the following A group; and the compound(s) is/are one or more calcogenides or nitrides;
A group: In, Sn, Ga, Si, Ge, Zn, Cd, Mg, Al, Ta and Ti.
4. The organic luminescence device according to claim 2, wherein the inorganic thin film layer comprises two or more selected from oxides, oxynitrides, carbides, and nitrides of In, Sn, Ga, Si, Al, Ta, Ti, Ge, Zn, Cd and Mg.

5. The organic luminescence device according to claim 2, wherein the inorganic thin film layer is made mainly of at least one of oxides of In, Sn and Ga.

6. The organic luminescence device according to claim 2, wherein the inorganic thin film layer is made mainly of $(\text{Si}_{1-x}\text{Ge}_x)\text{O}_y$ wherein $0 < x < 1$, and $1.7 < y < 2.2$.

7. The organic luminescence device according to claim 2, wherein the inorganic thin film layer comprises two or more of the metals or compounds, at least one of the metals or compounds having a work function of 4.5 eV or more.

8. The organic luminescence device according to claim 7, wherein the compounds are oxides, carbides, nitrides, silicides and borides.

9. The organic luminescence device according to claim 2, wherein the metals are two or more metals comprising one or more metals selected from the following A group; and one or more metals selected from the following B group;

A group: In, Sn, Ga, Si, Ge, Zn, Cd, Mg, Al, Ta and Ti;

B group: metals having a work function of 4.5 eV or more.

10. The organic luminescence device according to claim 9, wherein the metals in the B group are atoms belonging to any one of the groups IIIB, IVB, VB, VIB and VIIB in the periodic

table (long period type).

11. The organic luminescence device according to claim 9, wherein the metals in the B group are Au, Ni, Cr, Ir, Nb, Pt, W, Mo, Ta, Pd, Ru, Ce, V, Zr, Re, Bi and Co.

12. The organic luminescence device according to claim 2, wherein the metals are two or more metals comprising at least one selected from the following C group;

C group: Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

13. The organic luminescence device according to claim 12, wherein the compounds are oxides, carbides, nitrides, silicides, and borides.

14. The organic luminescence device according to claim 2, wherein the metals are two or more metals comprising one or more metals selected from the following A group; and one or more metals selected from the following C group;

A group: In, Sn, Ga, Si, Ge, Zn, Cd, Mg, Al, Ta and Ti;

C group: Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

15. The organic luminescence device according to claim 1, wherein the inorganic thin film layer is made mainly of at least one oxide selected from oxides of Ce, Pr, Nd, Sm, Eu, Gd,

Tb, Dy, Ho, Er, Tm, Yb, and Lu.

16. The organic luminescence device according to claim 1, wherein the inorganic thin film layer has a hole-injecting property.

17. The organic luminescence device according to claim 1, wherein the ionization energy of the inorganic thin film layer is more than 5.6 eV.

18. The organic luminescence device according to claim 1, wherein the ortho-metallized metal complex is an iridium complex.

19. The organic luminescence device according to claim 1, wherein the organic emitting layer comprises a polymer compound as a host material.

20. An organic emitting substrate wherein the organic luminescence device according to claim 1 is arranged on a plastic substrate.